UML Class Diagram

<<Class>> Observable

<<Interface>> Observer

MinesweeperModel (Extends Observable)

- FIELD_LENGTH: int
- FIELD_WIDTH: int
- flagsPlaced: int
- gameOver: boolean
- minefield: Space[][]
- mineLocations: HashSet<Points>
- NUMBER_OF_MINES: int
- safeSpaceReealed: int
- SAVE_NAME: String
- stepsTaken: int
- timeInSeconds: int

+ MineswpeerModel()
+ MineswpeerModel(length: int, width: int, mine: int)
+ MineswpeerModel(name: String)
- defaulSetting()
+ gameExit()
+ getDimensions(): int[]
+ getFlagsPlaced(): int
+ getMineFields(): Space[][]
+ getNumberOfMines(): int
+ getPlayerWon(): boolean
+ getSpacesRevealed(): int
+ getTime(): int
+ getTurns(): int
- initField()
+ isGameOver(): boolean
- markSpacesAdjacentToMines()
- placeMines()
- replaceMine()
- revealContiguousZeros(location: Point, checkedLocations: HashSet<Point>)
+ saveGameData()
+ setTime(time: int)
+ takeStep(location: Point)
+ toggleFlag(location: Point)

<<Interface>> Serializable

Space

- adjacentMines: int
- hasFlag: boolean
- hasMine: boolean
- revealed: boolean

+ Space()
+ addAdjacentMines()
+ adjacentMines(): int
+ hasFlag(): boolean
+ hasMine(): boolean
+ isRevealed(): boolean
+ placeFlag()
+ placeMine()
+ removeFlag()
+ removeMine()
+ reveal()
+ toString(): String

MinesweeperGUIView (implements Observer)

- alert: Alert
- alertShown: boolean
- BACK_GROUND_COLOR_1: Color
- BACK_GROUND_COLOR_2: Color
- FIELD_LENGTH: int
- FIELD_WIDTH: int
- SCENE_HEIGHT: int
- SCENE_WIDTH: int
- FLAG_SIZE: int
- SPACE_SIZE: int
- FLAG_LABEL: Label
- timeLabel: Label
- timeline: Timeline
- GREAT_FLAG: Image
- MINE: Image
- gridpane: GridPane
- gridpaneMap: ToggleButton[][]
- controller: MinesweeperController
- model: MinesweeperModel
- PLACE_ANIM_DURATION: Duration
- QUICK_SHAKE_DURATION: Duration
- SHAKE_DURATION: Duration
- WAVE_DURATION: Duration
- SAVE_NAME: String

+ start(stage: Stage)
+ update(o: Observable, arg; Object)
- initGame(legnth: int, width: int, mine: int)
- placeAnimation(toMove: Node, time: Duration)
- quickShake(toShake: Node, timeLimit: Duration)
- shakeAnimation(toShake: Node, timeLimit: Duration)
- waveAnimation(toWave: Node, timeLimit: Duration)
- removeFlag(button: ToggleButton)
- setEventListener(button: ToggleButton, pane: GridPane)
- setImage(img: String, button: ToggleButton)
- setlabel(x: int, y: int, pane: GridPane): ToggleButton[][]
- startTime()
- updateGrid(revealMine: boolean, spaceGrid: Space[][], playerWon: boolean)

MinesweeperLauncher

+ main(args: String[])
- argIsValid(args:String[]): boolean

Controller

- model: MineswpeerModel

+ Controller (model: MineswpeerModel)
+ getTime(): int
+ saveGameState()
+ setTime(time: int)
+ takeStep(x: int, y: int): boolean
+ toggleFlag(x: int, y: int): boolean